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THIS IS UNEVALUATED INFORMATION

- 50X1 1. A typical curriculum for all engineers in the USSR was as follows:

(a) First Year - differential calculus; analytical geometry; descriptive geometry; mechanical drawing; physics, with laboratory work; chemistry, with laboratory work; and theoretical mechanics (statics, kinematics, and dynamics).

(b) Second, Third, and Fourth Years - the subjects of study differed in accordance with the student's specialization. However, the following subjects were taken by all engineering students: mathematics II (integral calculus, including differential); strength of materials; statics of constructions; machine components, and elements of construction.

2. The chief subjects studied in the architectural VUZ's (Higher Educational Institutions) were: architecture, art of construction, estimates, concrete construction, steel construction, and wood construction. In addition to theoretical studies, each student had to submit a project on one of the above mentioned studies: Hydraulics, thermodynamics, technology of building materials (with laboratory work), sanitation engineering, and a special course in statistically undeterminable systems were also studied.
3. The VUZ's for mechanical engineers offered courses in: kinematics, dynamics of engines, technology of metals, hot and cold working of metals, and practical work in shops of the VUZ. In addition to laboratory work, each student had to submit a project for the course (on various machines).
4. The project or thesis presented for a diploma by students of the architectural VUZ's concerned: a residence, a public building, a hangar, a bridge, a mill, or special theoretical systems; for example, a new method of calculating

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CONFIDENTIAL/SECURITY INFORMATION

-2-

statistically undeterminable systems. Projects or theses presented for diploma by mechanical engineers concerned: a plant, a shop, or a design for a machine. Each student was assigned an advisor who helped him prepare the thesis, usually an experienced engineer working in the respective field.

5. The project or thesis presented for a diploma consisted of ten to twenty sheets of drawings, statistical dynamic computations, an explanatory note, and an estimate of costs. The defense of the thesis presented for a diploma took place before a special committee. After having successfully defended his project, the student received the title of engineer.

6. University Degrees

An engineer wishing to obtain the degree of Candidate of Technical Science had to prepare a dissertation. No special originality was required but the entire literature on the subject (both in Russian and in foreign languages) had to be interpreted. The next degree was that of Doctor of Technical Science. It was granted after the successful defense of a Doctor's dissertation. This dissertation could not be a compilation, but had to throw new light on the subject and present new, original methods of solution. The defense of the dissertation also took place before a special committee. The dissertation was first studied in written form by a specially appointed opponent, who criticized its separate parts and gave an evaluation of the entire work. In addition to this, a candidate for a Doctor's degree had to submit a list of his scientific publications or magazine articles. The degrees of "Corresponding Member" and "Member of the Academy of Science", were granted for a series of original publications.

7. Educational Degrees

An engineer received the rank of "Docent" after remaining in the VUZ for several years as a member of the teaching staff and after he had published a textbook or notes on his subject. If he had full charge of a certain course, he was designated as holder of the chair. After several years and the publication of a fundamental book on his subject, he received the rank of professor. Often, teaching in the VUZ's was carried on simultaneously with work in production, but in such cases, it was very difficult to receive the title of "Docent".

8. Textbooks

As a rule, the textbooks were written by Russian professors (with the exception of Timoshenko's book, "Strength of Materials and Elasticity Theory" which was translated from the English) and were accepted as texts in many VUZ's. Some translated works of German and American authors were also used, such as Salinger, Sutter, and others. Libraries carried books and magazines in foreign languages. These were chiefly used for writing dissertations and for scientific research work. There was enough literature available in Russian for the use of students and for routine engineering work. Most of these books were good, and some very good, for instance, "Steel Bridges" by Professor H. Streletskiy and "Computation of Frames", by Professor I. Rabinovich.

Methods of Screening Students

9. During the period 1923-1929 the VUZ's were filled with children of the old intelligentsia, with a very small percentage of workmen and Party members. In order to enter a VUZ, during that period, it was necessary for a student to pass examinations in algebra, trigonometry, geometry, physics, and Russian.
10. During the period 1929-1933, the Soviet Government wanted to have its own technically educated people and, therefore, many workmen were sent to the VUZ's. In order to prepare the workmen for the entrance examinations, the VUZ's organized special short term courses. In spite of the courses, the bulk of the prospective students proved to have such difficulties in learning the subjects that entrance requirements were lowered to a minimum. Examinations were abolished and engineers' diplomas were granted to persons on a very low educational level.

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CONFIDENTIAL/SECURITY INFORMATION

-3-

11. During 1933-1939 requirements were raised again. Shortly thereafter examinations were introduced. Workmen and Party members were still given the high priority by the VUZ's but more knowledge was demanded and a diploma from a ten-year school was required. About three to five per cent of the annual enrollment was reserved for the children of the old intelligentsia.
12. The year 1939 saw the introduction of a tuition fee of approximately 200 rubles per year and the cancellation of mass scholarships. From then on until 1941 scholarships were given only to a few especially brilliant students. After the year 1939 the VUZ's became accessible only to the children of the new Soviet aristocracy, the first steps toward building a class society.

Examinations

13. In order to enter a VUZ it was necessary to present not only a diploma from a ten-year school (public or high school), but also pass an entrance examination in geometry, algebra, trigonometry, sometimes in physics, in Russian, and in Ukrainian languages. The VUZ did not offer courses in geometry, algebra or trigonometry and a thorough knowledge of these subjects by the student was presupposed. Consequently the examination requirements were quite strict, exceptions to the rule were special cases that were of political character. For example, the enrollment of workmen in 1929-1933; enrollment of honored Party members; or a case of high patronage.
14. While at a VUZ, each student had to pass semiannual oral and written examinations given by the professors. The degree of difficulty of examination varied in direct ratio with the importance of the subject and the strictness of the professor. In case of failure, the student was usually permitted to try again after a while.
15. In the year 1929 the grades (5-A, 4-B, 3-C) for evaluating knowledge were abolished. The professor simply verified the fact that the examination had been passed and a credit given. During the last few years (1939-1941) the five-point grading system was reintroduced. Many people with political backing, such as Party members, took advantage of their privileged position in order to get credits without acquiring the needed knowledge. However, just prior to World War II examinations requirements were raised even for Party members.

16. Withdrawal of Students

Up to 25% of the matriculating students did not complete their education. Reasons for the withdrawals were usually of an economic nature. In 1939 when tuition fees were introduced, a great many students left the VUZ's. Shortly afterward the withdrawals of students decreased as the VUZ's were filled with young people of means. Tuition fees were introduced not only for the VUZ's but also for the last three years of the ten-year school. Therefore, the working class could not educate its children beyond the 7th grade.

17. Assignments of graduating engineers was performed by a special commission. The decision of the commission was not subject to appeal. A young engineer would be assigned to some plant and no consideration was given to his desires or to his family's situation. There were many cases where a husband and wife were sent to different parts of the country. However, engineers who had powerful patronage or acquaintances in high offices could always obtain the assignments they desired.
18. Further training of engineers depended on the engineer himself in most cases. Plants and large construction combines had good technical libraries with foreign literature and foreign technical magazines. Good technical books in Russian were being published constantly.

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